

Joins in Geotextile Reinforced Seals

pavement work tips - No 53

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INTRODUCTION

Geotextile Reinforced Seals (GRS) are a cost effective means of waterproofing heavily cracked pavements and reducing reflective cracking in both Strain Alleviating Membrane (SAM) and Strain Alleviating Membrane Interlayer (SAMI) applications.

General guidelines for GRS are provided in Pavement Work Tip No. 25 and Austroads Technical Report AP-T37/05. The purpose of this work tip is to emphasise the importance of jointing techniques in providing good intermediate and long term performance of GRS.

LONGITUDINAL JOINTS

All longitudinal joints, whether being used as a SAM or SAMI treatment, should be overlapped by approximately 150 mm.

Overlapping ensures transfer of traffic induced stresses from one lane of fabric to the other in a similar manner to the joining of most sheet materials. An overlap of 150 mm also provides some margin for minor wandering in fabric placing.



Figure 1. Slippage of butt joint in fabric used as a SAMI under ultra thin asphalt surfacing

Overlapping is particularly important where there may be increased horizontal forces due to curves or elevated crossfalls. Very smooth surfaces, such as smooth asphalt, also increase the risk of slippage under horizontal shear forces.

Preferably, longitudinal joints should be placed outside wheel path areas, particularly in SAM applications. Figure 2 shows combined effects of a butt jointed fabric in a SAM seal placed on smooth surface and subjected directly to traffic induced stresses.



Figure 2 Slippage of butt jointed fabric in SAM seal

TRANSVERSE JOINTS

Transverse joints in both SAM and SAMI are best butt jointed to avoid creating a bump that could affect the ride quality. Overlapping of transverse joints may also result in insufficient binder to hold the aggregate in place.

In most situations, transverse joints are likely to only occur at intervals of several hundred metres, depending on the length of fabric rolls being used. Free running traffic creates very little longitudinal surface stress and overlapping of the transverse joint is not required.

Key Summary

This issue of "pavement work tips" provides a guide to jointing techniques in geotextile reinforced seals.

BINDER ALLOWANCES

Allowance for additional binder absorption in the overlap of geotextile fabric layers in GRS is essential.

Additional binder must be applied to the overlap to avoid the seal stripping along the joint and to compensate for the additional absorption in the double layer of fabric.



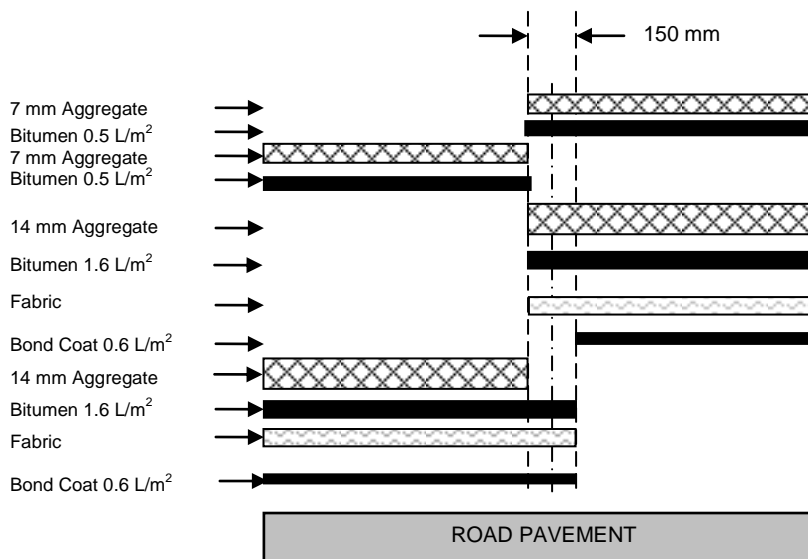
Figure 3. Stripping of seal from overlapped fabric placed without additional binder allowance

There are several different techniques for applying additional binder to the geotextile fabric overlap.

Generally the additional binder required can be applied overlapping the binder application in the first application for each lane as shown in Figure 4. This avoids the need for an additional sprayer run for the application of binder directly to the overlapped portion of the seal.

In some instances, particularly where high binder application rates are involved, this technique may result in slightly more binder than required. However, as this is usually located outside of wheel path areas there is little risk of flushing or bleeding as a result.

Figure 4 shows a typical application sequence for a double/double GRS application. The same principle applies for a single/single GRS such as used in SAMI applications where there is no second application of binder and aggregate.



- Notes:**
1. The application rates shown above are by way of example only. A detailed seal design should always be carried out taking into consideration traffic volumes, existing surface type, fabric type, binder type, etc.
 2. In hot weather, binder application rates for each layer may be varied to avoid pick up, provided that total design binder application rate is maintained.
 3. Width of spray refers to effective width of spray and requires appropriate end nozzles to ensure sufficient binder at the outer edges of the bond coat.

Figure 4 Typical Placing Sequence for a 14/7 mm Geotextile Reinforced Seal

REFERENCES

Austrroads 2005, *Geotextile Reinforced Seals* AP-T37/05.

Austrroads/AAPA 2014, Pavement Work Tip No. 25: *Geotextile Reinforced Seals*.

For more information on any of the construction practices discussed in "pavement work tips", please contact either your local Austroads representative or AAPA: tel (03) 9853 3595; fax (03) 9853 3484; e-mail: info@aapa.asn.au.

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